CSCE 341 - F24:
Exam 1 Study Guide

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Learning Goals

This is an outline of the things you have learned so far. Problems on the exam will reference these, showing why these problems were selected to test your knowledge. This outline may not be complete.

1. Background

   (a) Sets
   (b) Relations
   (c) Functions
   (d) Graphs
   (e) Strings and Languages
   (f) Boolean Logic
   (g) Proof Techniques

2. DFAs

   (a) Finite State Automata
   (b) DFA Definition–Formal & Informal
   (c) Translate between DFAs and languages
   (d) Combine DFAs to show closure properties of regular languages

3. NFAs

   (a) NFA Definition–Formal & Informal
   (b) Translate between NFAs and languages
   (c) Show equivalence of NFAs and DFAs
   (d) Use NFAs to show closure properties of regular languages

4. Regular Expressions

   (a) Regular Expression Definition
   (b) Translate between regular expressions and set descriptions of languages
   (c) Show equivalence between regular expressions and NFAs, DFAs

5. Non-Regular Languages

   (a) Know and understand the Pumping Lemma for Regular Languages
   (b) Prove the Pumping Lemma
   (c) Determine whether a language is regular
   (d) Use the Pumping Lemma to prove a language is not regular
   (e) Use closure properties to prove a language is not regular